

DTR JL EZYA TRACTION CONTROL SYSTEM INSTALLATION INSTRUCTIONS - For 1998 - 2006 Electric EZ-GO, And 1998 - 2006 Yamaha Gas G11, G14, G16, G20, G21 & G22, or 1998 - 2006 Electric G16, G19, G22 Models.

Thank you for purchasing this quality product from Nivel Manufacturing. The Traction Control System (TCS) you have purchased is designed to function much like a limited slip differential system. It does not provide an absolute differential lock, but transfers torque to the rear wheels equally, while allowing enough slippage to prevent steering issues normally observed with differential lock systems. (TCS - Patent pending)

Due to the size of this project, some steps have been abbreviated. It is recommended that you refer to your car manufacturer's service manual for detailed rear transaxle removal, disassembly, reassembly and installation instructions. Please read and understand all of these instructions before starting this project. The additional time required will help you to fully understand the full scope of the job ahead. Be sure to refer to the sections pertaining specifically to your brand of car.

CAUTION:

Always disconnect the negative (-) cable from the battery before beginning.

Always support your cart on Jack Stands rather than a floor jack

Always wear eye protection when working on your vehicle.

Always clean up oil spills immediately and properly dispose of oil or oil soaked rags



Rear Axle Disassembly

1. Raise the rear end of the car completely off the ground and support it with 2 jack stands placed under solid frame sections just in front of the rear wheels.
2. Lock the park brake as tight as you can and then remove the cotter pin and nut at the outer end of each rear axle assembly. Release the park brake and with some prying or tapping with a mallet, the brake drum/hub should pull off from each rear axle shaft.
3. Using snap ring pliers, remove the outside snap ring securing each axle shaft bearing. See figure 2. The axle shafts can now be pulled from the axle housing. If the axle shaft does not remove easily, the drum/hub can be installed with a nut and used to help leverage the axle shaft from the housing.
4. Slide a drain pan under the rear cover, then remove all of the bolts from the transaxle assemblies rear cover. See figure 3. Begin prying the cover loose using a flat putty knife. See figure 4. **USE CARE NOT to bend this cover as this will prevent proper sealing when it is installed later.**

NOTE: Drained oil is considered a hazardous material and only proper legal disposal methods should be used.

5. Clean the old sealant from the cover's inner surface and the mating surface on the transaxle case. **Be careful not to nick or gouge the aluminum case material as the old sealant is removed.**
6. Remove the two bearing caps, one on each side of the differential & ring gear assembly, then remove the differential & ring gear assembly from the transaxle housing. See figure 5 & 6.

Traction Control System Installation:

7. Using a press or vise, gently compress the friction rings into the machined grooves on each outer face of the TCS case halves. Use care to assure each is positioned correctly before installation or damage to the friction rings will occur. See figure 7.
8. Insert the four large springs into the spring pockets machined into one of the case halves. Then insert the 4 smaller springs into the 4 larger ones. See figure 8.
9. Place the assembled TCS into a vise or press making sure the friction surfaces are supported and compress the unit. Slide the locking pins provided, into the retaining holes on the TCS case halves to hold the unit compressed.
10. Release pressure on the TCS unit and set aside. See figure 9.
11. Remove the four nuts and bolts holding the ring gear to the differential and remove the



Figure 1

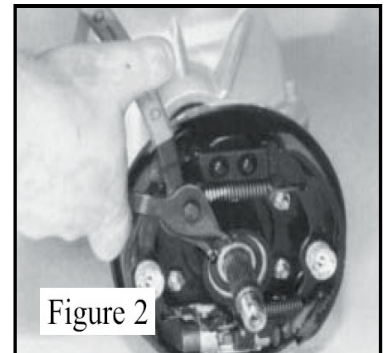


Figure 2

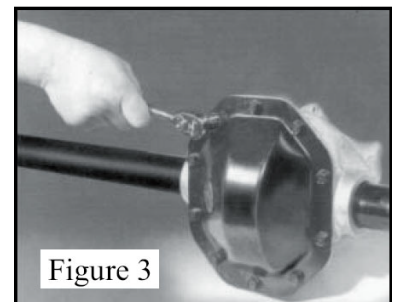


Figure 3

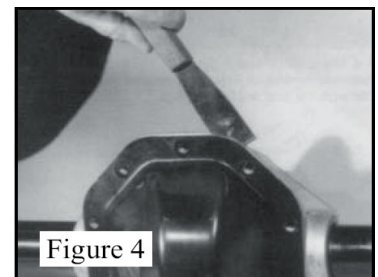


Figure 4

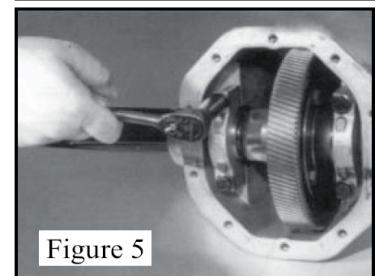


Figure 5

ring gear. See figure 10.

12. Drive out the roll pin securing the spider gear shaft, using a small pin punch. Drive it from the inside out as shown in figure 11.
13. Slide the spider gear shaft out of the case. Watch closely to insure that any thrust washers or shims behind these gears do not fall out of place during this operation. Slip the TCS unit into the differential with the friction surfaces facing the differential side gears. See figure 13.
14. Align the cross shaft holes in the differential case, spider gears, spider gear shims, and TCS unit and hold in place while the spider gear cross pin is inserted. See figure 13.
15. Pry the two locking pins out of the TCS case halves
16. Verify the unit has seated against the faces of the side gears. See figure 14.
17. Secure the cross shaft with the role pin.
18. Install the ring gear and torque the bolts and lock nuts to 35 ~ 45 ft. lbs. See figure 15.

Rear Axle Assembly

19. Make sure the bearing cap bolts and their mounting holes are cleaned with spray brake cleaner, rubbing alcohol or a Lock Tite "Clean-N-Prime" chemical. Once the bolts and their holes are dried, install the bearing cap bolts using the blue grade of Lock Tite or similar thread locking compound. Place the differential & ring gear assembly into the rear axle housing, aligning the ring gear teeth with the intermediate gear. Install the two bearing caps, one on each side of the differential & ring gear assembly, then torque the cap bolts to 35 ~ 45 ft. lb. See figure 5.
20. Check to make sure that the sealing surfaces on the axle assembly case and the differential cover are both clean and free of any oily residual. It is best if you can clean both surfaces with a carburetor cleaner or rubbing alcohol just before assembly.
21. Apply a thin layer of RTV silicon sealant over both the gear case and cover sealing surfaces. See figure 16. Place the cover into place on the rear axle case and install all of the bolts finger tight. Now begin snugging down each bolt, working in a crisscrossing pattern. Then repeat the process and torque each bolt to 16 ~ 20 ft lb. See figure 3.
22. Insert each rear axle shaft, rotating it slightly to align the axle shaft with the differential gears inside. Install the snap ring to retain the outboard bearing. See figure 2.
23. Install the brake drum/hub on each side. Install the axle nut, lock the parking brake and torque to 95 ~ 98 ft. lb. Install a new cotter pin through each.

NOTE: If the desired torque is reached and the cotter pin slot is not aligned, continue tightening until the next slot is available. NEVER loosen the nut to align a cotter pin slot or the axle shaft will strip the drum/hub within a short time.

24. Install the wheels, snug the lug nuts in a crisscrossing pattern, then remove the jack stands and lower the car to the ground. Torque the lug nuts in a crisscrossing manner, to 45 to 65 ft lb.
25. You will need to refill the axle housing with oil.
 - a. **ELECTRIC:** Note which side of the axle assembly the filler/drain plug is on. To add the 32 oz of 90 wt gear oil to the axle assembly, you will need to use the jack to raise the filler plug side of the cart sufficiently that the oil can be pumped in through the filler/drain opening.
 - b. **GAS:** Locate the filler/level plug in the gear case, just under and behind the driver side rear axle shaft. Remove the plug and add 90 wt gear oil to the axle assembly, only until it begins to dribble out of the filler opening.
26. Reconnect the battery negative cable and you're ready to test drive your cart.

SERVICE NOTES

Oil Change Intervals:

Most factories recommend changing the rear axle assembly oils somewhere between 2 to 4 years. The friction surfaces in the TCS unit will wear over time releasing "dust" into the transaxle oil. The friction materials used in the Nivel Manufacturing TCS kit are specifically designed to operate in oil and will not compromise the effectiveness of the lubricant. You will notice after breaking in the TCS the transaxle oil will develop a green tint. This is normal and it is not necessary to change the oil. It is recommended to inspect the condition of the transaxle lubricant after the initial six months or one hundred hours of operation and replace. Change transaxle oil annually thereafter.

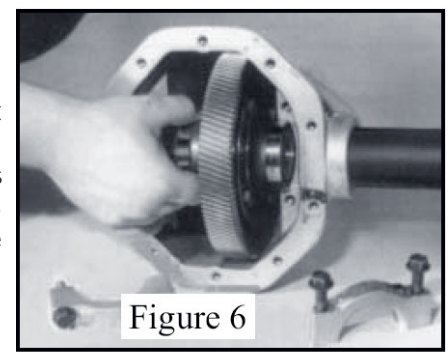


Figure 6

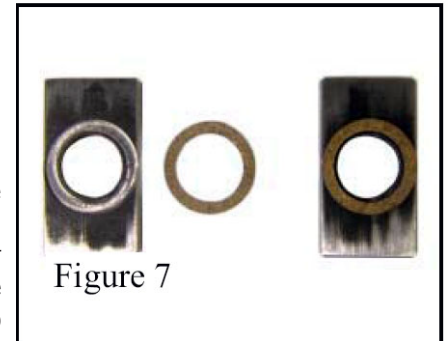


Figure 7

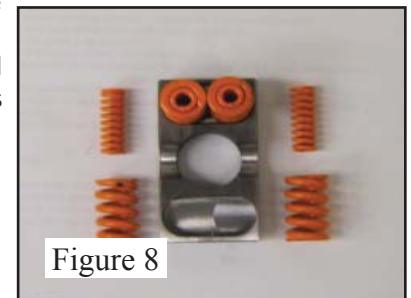


Figure 8

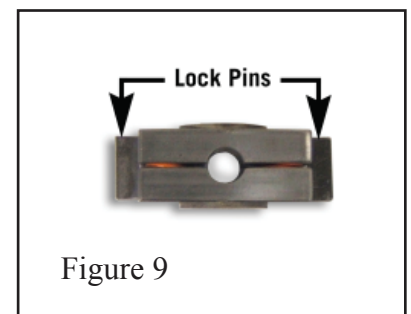


Figure 9

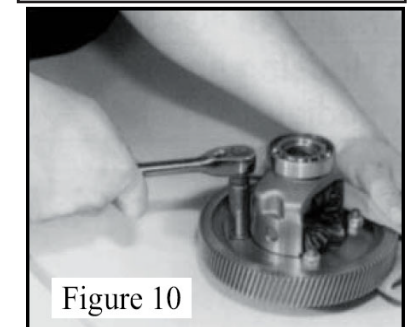


Figure 10

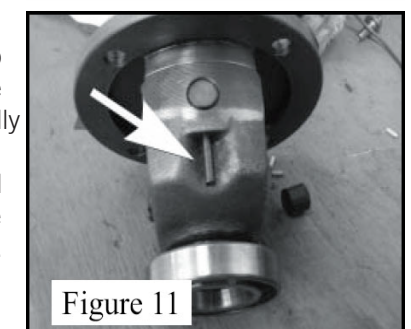


Figure 11

TCS Removal for Rebuilding:

The TCS unit can be rebuilt by replacing the two friction rings. Should you need replacement friction rings for your car, order Nivel Manufacturing part number DTR EZYA 0017.

1. Use the instructions above for removal and for reassembly.
2. Once the TCS unit is removed from your differential assembly, the friction rings can be pried from the TCS housings, using a small flat blade screw driver.

NOTE: Be sure to clean the friction ring grooves, but use care to prevent enlarging of the ring groove. The new friction rings must fit tightly into each groove.

3. Completely clean any oil residue off of the TCS halves
4. Using a press or vise, gently compress the friction rings into the machined grooves on each outer face of the TCS case halves. Use care to assure each is positioned correctly before installation or damage to the friction rings will occur.
5. Reinstall the TCS into the differential by following the steps listed above under Traction Control System Installation.

TCS Operation

The Nivel Manufacturing Traction Control System is a passive system, designed to transfer power to the wheel with the most traction in slippery driving conditions. There are a few tricks you can do as the operator of the vehicle to improve the performance of your TCS unit.

Traction is directly proportional to the amount of weight located above each wheel. If you incur excessive wheel spin, try shifting your weight over top of the spinning tire. Having two individuals riding in the cart or a single operator sitting in the middle of the vehicle, will provide the most even weight distribution and will result in optimal TCS performance.

Should one rear wheel ever come completely off the ground and begin to spin freely, you can lock the TCS unit to deliver extra power by torque braking the vehicle. Press the accelerator and the brake together, balancing the pressure between the pedals until the vehicle begins to move. If the drive train does not make enough power to move the vehicle be extremely careful as prolonged stalling of the engine or motor can cause overheating and damage. On modified cars producing enough torque for extreme off road conditions, this technique will allow the vehicle to traverse most any obstacle.

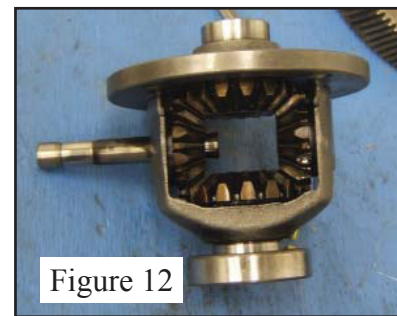


Figure 12



Figure 13



Figure 14

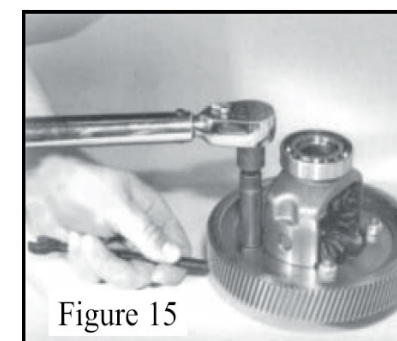


Figure 15

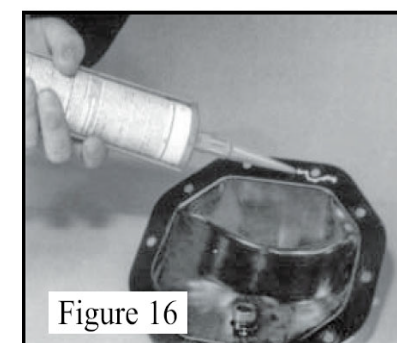


Figure 16